

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of :
Ronald STEIGER :
Serial No. Not yet assigned : Group Art Unit: Not yet assigned
Filed: herewith : Examiner: N/A
For: A SPRAYING METHOD AND A SPRAY SYSTEM FOR COATING LIQUIDS

PRELIMINARY AMENDMENT

Assistant Commissioner For Patents
Washington, D.C. 20231

Dear Sir:

Preliminary to examination of the above-referenced application, please amend the application:

IN THE CLAIMS:

Please amend claims 4 to 8, 11 to 14, 17 and 20 as follows:

4. (Amended) Spraying method as claimed in claim 1, characterized in that the accessory liquid (18) is fed in distributed manner over at least a portion of the periphery of the spray jet (14) to this spray jet.

5. (Amended) Spraying method as claimed in claim 1, characterized in that at least a portion of the accessory liquid (18) is deposited on an externally peripheral terminal zone (46) of the liquid atomizer (4) and then is guided by said atomizer into the spray jet (14).

6. (Amended) Spraying method as claimed in claim 1, characterized in that the accessory liquid (18) is fed through at least one nozzle aperture (26) which is configured at the front end segment of the spray system (2), in the form of an unbroken jet to the spray jet (14).

7. (Amended) Spraying method as claimed in claim 1, characterized in that the liquid atomizer (4) is a rotary atomizing element and in that the accessory liquid (18) is dripped onto the terminal zone (46) of the external periphery of the rotary atomizing element (4) and then is flung off said zone (46), on account of latter's centrifugal forces, into the spray jet (14).

8. (Amended) Spraying method as claimed in claim 1, characterized in that a system component (4), which shall make contact the spray system with the coating liquid on its way to the spray jet (14), is cooled by a fluid and cooled coolant (52) and in that this cold of the coolant is transmitted through the cold conductivity of the system component (4) to the spray coating liquid.

11. (Amended) Spray system as claimed in claim 9, characterized in that the accessory-liquid feed unit (16) is designed to feed the accessory liquid (18) into the spray jet (14) at the front end of the liquid atomizer (4).

12. (Amended) Spray system as claimed in claim 9, characterized in that the accessory-liquid feed unit (16) is designed to feed the accessory liquid (18) distributed around the spray jet (14) into this jet.

13. (Amended) Spray system as claimed in claim 1, characterized in that the accessory-liquid feed unit (16) is designed to deposit at least a portion of the accessory liquid (18) onto a front terminal zone (46) of the external periphery of the liquid atomizer (4) and then to guide said accessory liquid from said zone (46) into the spray jet (14).

14. (Amended) Spray system as claimed in claim 9, characterized in that the minimum of one discharge (26) of the accessory liquid (18) is configured at the front terminal zone of the spray system (2).

17. (Amended) Spray system as claimed in claim 1, characterized in that it comprises a cooling unit (50) to cool at least one component (4) of the spray-system (2) by means of a fluid, cooled coolant (52), said system component (4) being in contact with the coating liquid on its way to the spray jet (14) and being cold-conducting in order to transmit cold from the coolant (52) onto the spray-coating liquid.

20. (Amended) Spray system as claimed in claim 17, characterized in that the coolant is a cooled gas.

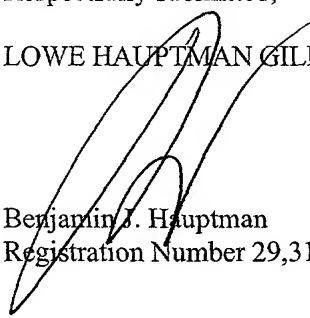
REMARKS

The above-referenced application is amended to delete the multiple dependencies of claims 4 to 8, 11 to 14, 17 and 20.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached pages are captioned "Marked-Up Version Showing Changes".

Respectfully submitted,

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CLAIMS

1. A method for spraying coating liquid, wherein coating liquid is sprayed from a spray system (2) through a liquid atomizer (4) in the form of an irrotational nozzle or in the form of a rotating rotary atomizing element onto an object to be coated

characterized in that

the microclimate in said spray jet is controlled by an accessory liquid (18) being metered into the spray jet (14) of coating liquid.

2. Spraying method as claimed in claim 1, characterized in that the accessory liquid (18) is fed to the starting zone of the spray jet (14) before said spray attains its full diameter.

3. Spraying method as claimed in claim 2, characterized in that the accessory liquid (18) is fed from the front end of the liquid atomizer (4) or shortly downstream of it to the spray jet.

4. Spraying method as claimed in ^{claim 1} ~~one of the above claims~~ characterized in that the accessory liquid (18) is fed in distributed manner over at least a portion of the periphery of the spray jet (14) to this spray jet.

5. Spraying method as claimed in ^{claim 1} ~~one of the above claims~~ characterized in that at least a portion of the accessory liquid (18) is deposited on an externally peripheral terminal zone (46) of the liquid atomizer (4) and then is guided by said atomizer into the spray jet (14).

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6. Spraying method as claimed in ^{claim 1} ~~[one of the above claims]~~ characterized in that the accessory liquid (18) is fed through at least one nozzle aperture (26) which is configured at the front end segment of the spray system (2), in the form of an unbroken jet to the spray jet (14).

7. Spraying method as claimed in ^{claim 1} ~~[one of the above claims]~~ characterized in that the liquid atomizer (4) is a rotary atomizing element and in that the accessory liquid (18) is dripped onto the terminal zone (46) of the external periphery of the rotary atomizing element (4) and then is flung off said zone (46), on account of latter's centrifugal forces, into the spray jet (14).

8. Spraying method as claimed in ^{claim 1} ~~[one of the above claims]~~ characterized in that a system component (4), which shall make contact the spray system with the coating liquid on its way to the spray jet (14), is cooled by a fluid and cooled coolant (52) and in that this cold of the coolant is transmitted through the cold conductivity of the system component (4) to the spray coating liquid.

9. A coating-liquid spray system containing a liquid atomizer (4) in the form of an irrotational nozzle or in the form of a rotating rotary atomizing element to spray the coating liquid onto an object to be coated,

characterized in that

it comprises an accessory-liquid feed unit (16) fitted with at least one discharge (26) to meter the accessory liquid (18) into the coating-liquid's spray jet (14).

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10. Spray system as claimed in claim 9, characterized in that the accessory-liquid's feed unit (16) is designed to feed the accessory liquid (18) into the initial zone of the spray jet (14) before said jet attains its maximum diameter.

5 11. Spray system as claimed in ^{claim 9} ~~either of claims 9 and 10~~, characterized in that the accessory-liquid feed unit (16) is designed to feed the accessory liquid (18) into the spray jet (14) at the front end of the liquid atomizer (4).

12. Spray system as claimed in ^{claim 9} ~~one of claims 9 through 11~~, characterized in that the accessory-liquid feed unit (16) is designed to feed the accessory liquid (18) distributed around the spray jet (14) into this jet.

13. Spray system as claimed in ^{claim 9} ~~one of claims 9 through 12~~, characterized in that the accessory-liquid feed unit (16) is designed to deposit at least a portion of the accessory liquid (18) onto a front terminal zone (46) of the external periphery of the liquid atomizer (4) and then to guide said accessory liquid from said zone (46) into the spray jet (14).

14. Spray system as claimed in ^{claim 9} ~~one of claims 9 through 13~~, characterized in that the minimum of one discharge (26) of the accessory liquid (18) is configured at the front terminal zone of the spray system (2).

15. Spray system as claimed in claim 14, characterized in that the liquid atomizer (4) is a rotary atomizing element and in that the accessory-liquid feed unit (16) is designed to drip the accessory liquid (18) onto the front terminal zone (46) of the external periph-

ery of the rotary atomizing element and to fling the dripped accessory liquid (18) from the rotary atomizing element by means of latter's centrifugal forces into the spray jet.

16. Spray system as claimed in claim 14, characterized in that the accessory-liquid feed unit (16) inclusive its minimum of one discharge (26) is designed to deliver the accessory liquid (18) in the form of a continuous jet.

17. Spray system as claimed in ^{claim 1} ~~one of the above claims~~, characterized in that it comprises a cooling unit (50) to cool at least one component (4) of the spray-system (2) by means of a fluid, cooled coolant (52), said system component (4) being in contact with the coating liquid on its way to the spray jet (14) and being cold-conducting in order to transmit cold from the coolant (52) onto the spray-coating liquid.

18. Spray system as claimed in claim 17, characterized in that the system component (4) comprises a site (10) which is in contact with the spray-coating liquid on its way to the spray jet (14) and a site (54) which is not in contact with the spray-coating liquid on its way to the spray jet (14), and in that the cooling unit (50) is designed to feed the coolant (52) to the out-of-contact site (54) of the system component (4).

19. Spray system as claimed in claim 18, characterized in that the liquid atomizer is a rotary atomizing element (4) which is crossed by the coating liquid and in that the site (54) in contact with the coating liquid is an external, peripheral surface of the rotary atomizing element (4).

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20.

Spray system as claimed in ^{claim 17}~~[one of claims 17 through 19]~~, character-

ized in that the coolant is a cooled gas.

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